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NEW CLAIMS

1. An air supply control method for a turbocharged engine having an intake manifold (20) downstream of the compressor of the turbocharger (14) and an exhaust manifold (22) upstream of the turbine of the turbocharger (14), in which the mass air flow supplied to the engine and/or the pressure in the intake manifold (20) are determined, together with the temperature in the exhaust manifold, characterized in that the pressure in the exhaust manifold (22) is determined as a function of the pressure in the intake manifold (20), the engine speed, and the temperatures in the cylinders (4) and in the exhaust manifold (22).
2. The control method as claimed in claim 1, characterized in that a correction factor dependent on the ambient surrounding pressure is provided.
3. The control method as claimed in claim 2, characterized in that the pressure in the exhaust manifold (22) P_{exh} is calculated by a formula of the type:
- $$P_{exh} = [A(T_c) * MAP - B(N, AMP, T_{exh})] / C(T_{exh}),$$
- where A, B and C are predetermined functions, T_c is the temperature in the cylinders, MAP is the pressure in the intake manifold, N is the engine speed, AMP is the ambient pressure and T_{exh} is the temperature of the burnt gases in the exhaust manifold.
4. The control method as claimed in one of claims 1 to 3, characterized in that the air flow supplied to the engine is regulated by means of a throttle valve (18), and in that, when this throttle valve (18) is near its closed position within

predetermined limits during a specified time interval, the ambient external pressure AMP is calculated on the basis of the exhaust pressure as a function of the engine speed.

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5. An air supply control method for a turbocharged engine having an intake manifold (20) downstream of the compressor of the turbocharger (14) and an exhaust manifold (22) upstream of the turbine of the turbocharger (14), in which the mass air flow supplied to the engine and/or the pressure in the intake manifold (20) are determined, together with the temperature in the exhaust manifold (22), characterized in that the pressure in the exhaust manifold (22) is measured by means of a sensor or the like, and in that the pressure in the intake manifold (20) is determined on the basis of the exhaust pressure
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measured as a function of the engine speed and the temperatures in the cylinders (4) and in the exhaust manifold (22).

- 5 6. The control method as claimed in claim 5, characterized in that a correction factor dependent on the ambient surrounding pressure is provided.
- 10 7. The control method as claimed in claim 6, characterized in that the pressure in the intake manifold MAP is calculated by a formula of the type:
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$$\text{MAP} = [\text{F}(\text{N}, \text{T}_{\text{exh}}) * \text{P}_{\text{exh}} + \text{G}(\text{N}, \text{AMP}, \text{T}_{\text{exh}})] / [\text{H}(\text{N}, \text{T}_{\text{c}})],$$
 where F, G and H are predetermined functions, T_{c} is the temperature in the cylinders, P_{exh} is the pressure in the exhaust manifold, N is the engine speed, AMP is the ambient pressure and T_{exh} is the temperature of the burnt gases in the exhaust manifold.
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8. A control method as claimed in one of claims 1 to 7, characterized in that the temperature in the exhaust manifold (22) is determined on the basis of modeling.
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